

REMARKS

In the Office Action mailed July 16, 2001, claims 1-34 and 36-70 were rejected. By this amendment, claims 1, 5, 6, 9, 10, 28, 53 and 54 have been amended. No claims have been added or deleted by this amendment. No claim has yet been allowed in this application. Claims 1-34 and 36-70 are currently pending.

Rejections 35 USC § 112

Claims 5, 6, 9, 10, 53 and 54 have been rejected under 35 USC Section 112, second paragraph on the grounds that “The term “type” as recited in at least claims 5, 6, 9, 10, 53 and 54 renders the claims unclear...”. This concern has been addressed by clarifying amendments to these respective claims. It is to be understood that these amendments were made only to address this concern by clarifying the claimed subject matter and do not represent a change in claim scope.

Rejections 35 USC § 103

Claims 1-34 and 36-70 have been rejected under 35 USC Section 103 “as being unpatentable over Wu et al. (USP 5,346,954) or Dunkle (USP 4,659,767), optionally in view of Aoyama et al.

This application is a divisional application from US Application 08/738,768. In that application, there was a restriction requirement between groups of claims directed to an impact additive and a polymer composition, respectively (See Office Action mailed May 21, 1997). Applicant elected the claims drawn to the impact additive. Claims drawn to the impact additive were allowed and patented, including claim 1 (See Notice of Allowance and Issue Fee Due mailed March 10, 1998 and US Patent No. 5,773, 520.

Claim 1 of the application herein is directed to “a polyvinyl chloride composition” containing an impact additive. Claim 1 has been amended such that the impact additive mirrors the impact additive of claim 1 of the allowed parent application. Therefore, this claim contains subject matter which has already been found to be nonobvious over the prior art.

Claim 28 of the application herein is directed to “a thermoplastic polymer composition” containing an impact additive. Claim 28 has been amended such that the impact additive mirrors the impact additive of allowed claim 1 of the parent application. Therefore, this claim contains subject matter which has already been found to be nonobvious over the prior art.

Since claims 1 and 28 are drawn to subject matter which has already been found to be patentable, it is respectfully submitted that these rejections be withdrawn.

In regard to claims 49-70, and specifically independent claims 49 and 69, no evidence has been presented to show or suggest the combination of components used in the core defined in claims 49-70. More specifically, no evidence has been presented to show the use of diallyl maleate as a grafting agent in the core.

The subject matter of claim 49 does not include limitations regarding the covering, but more specifically recites components of the core including the diallyl maleate grafting agent.

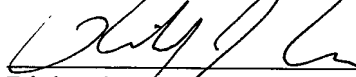
The subject matter of claim 69 also contains further recitations regarding the core, and does not include limitations regarding the covering. The claim specifically recites the use of a diallyl maleate grafting agent.

Accordingly, it is respectfully requested that these rejections be withdrawn.

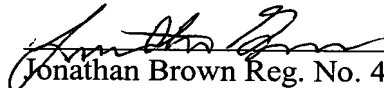
In view of the foregoing, it is respectfully submitted that this application is in condition for immediate allowance.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Four times Amended) A polyvinyl chloride composition containing a core/shell impact additive composed of a core based on alkyl acrylate or on a polyorganosiloxane rubber and a shell based on poly(alkyl methacrylate) or on a styrene-acrylonitrile copolymer, said impact additive comprising from:

a) 70 % to 90 % by weight of a crosslinked elastomeric core which is composed:

1) of 20 % to less than 100 % by weight of a nucleus composed of a copolymer (I) of an n-alkyl acrylate, the alkyl group having a carbon number ranging from 5 to 12, of a polyfunctional crosslinking agent possessing unsaturated groups in its molecule, at least one of which is a vinyl group and optionally of a polyfunctional grafting agent possessing unsaturated groups in its molecule, at least one of which is an allyl group,

2) of more than 0 and not more than 80 % by weight, of a covering composed of a copolymer (II) of n-alkyl acrylate, the alkyl group of which has a carbon number ranging from 4 to 12, and a grafting agent possessing allyl groups, the said covering containing a molar amount of grafting agent ranging from 0.05 % to 2.5 %, said grafting agent having only allyl functional groups, all having the same reactivity and,

b) 30 % to 10 % by weight of a shell grafted onto the said core composed of a polymer of an alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, or alternatively of a statistical copolymer of an alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, and of an alkyl acrylate, the alkyl group of which has a carbon number ranging from 1 to 8, containing a molar amount of alkyl acrylate ranging from 5 % to 40 %, or alternatively composed of a styrene-acrylonitrile copolymer.

5. (Twice Amended) A composition according to Claim 1, characterized in that the crosslinking agent is chosen from derivatives possessing at least two vinyl double bonds of $\text{CH}_2=\text{C}$ - ~~vinyl type~~.

6. (Twice Amended) A composition according to Claim 1, characterized in that the crosslinking agent is chosen from derivatives possessing one or a number of vinyl double bonds ~~of vinyl type~~ and at least one allyl double bond of $\text{CH}_2=\text{CH}-\text{CH}_2$ - ~~allyl type~~.

9. (Twice Amended) A composition according to Claim 1, characterized in that the grafting agent is chosen from derivatives possessing at least two allyl double bonds of $\text{CH}_2=\text{CH}-\text{CH}_2$ - ~~allyl type~~.

10. (Twice Amended) A composition according to Claim 1, characterized in that the grafting agent is chosen from derivatives possessing one or ~~a number of~~ more allyl double bonds ~~of allyl type~~ and at least one vinyl double bond ~~of vinyl type~~.

28. (Four times Amended) A thermoplastic polymer composition containing a core/shell impact additive composed of a core based on alkyl acrylate or on a polyorganosiloxane rubber and a shell based on poly(alkyl methacrylate) or on a styrene-acrylonitrile copolymer, said impact additive comprising from:

a) 70 % to 90 % by weight of a crosslinked elastomeric core which is composed;

1) of 20 % to less than 100 % by weight of a nucleus composed of a copolymer (I) of an n-alkyl acrylate, the alkyl group of which has a carbon number ranging from 5 to 12, of a polyfunctional crosslinking agent possessing unsaturated groups in its molecule, at least one of which is of a vinyl group, and optionally of a polyfunctional grafting agent possessing unsaturated groups in its molecule, at least one of which is an allyl group,

2) of an amount above 0%, but not more than 80 % by weight, of a covering composed of a copolymer (II) of n-alkyl acrylate, the alkyl group of which has a carbon number ranging from 4 to 12, and a grafting agent possessing allyl groups, the said covering containing a molar amount of grafting agent ranging from 0.05 % to 2.5 %, said grafting agent having only allyl functional groups, all having the same reactivity, and

b) 30 % to 10 % by weight of a shell grafted onto the said core composed of a polymer of an alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, or alternatively of a statistical copolymer of an alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, and of an alkyl acrylate, the alkyl group of which has a carbon number ranging from 1 to 8, containing a molar amount of alkyl acrylate ranging from 5 % to 40 %, or alternatively composed of a styrene-acrylonitrile copolymer.

53. (Amended) A composition according to claim 49, characterized in that the crosslinking agent is chosen from derivatives possessing at least two vinyl double bonds of $\text{CH}_2=\text{C}<$ ~~vinyl type~~.

54. (Amended) A composition according to claim 49, characterized in that the crosslinking agent is chosen from derivatives possessing one or a number of double bonds of vinyl type and at least one allyl double bond of $\text{CH}_2=\text{CH}-\text{CH}_2$ - ~~allyl type~~.